



April 14, 2015

Ethanol 2015: Emerging Issues Forum - ICM Line of Sight



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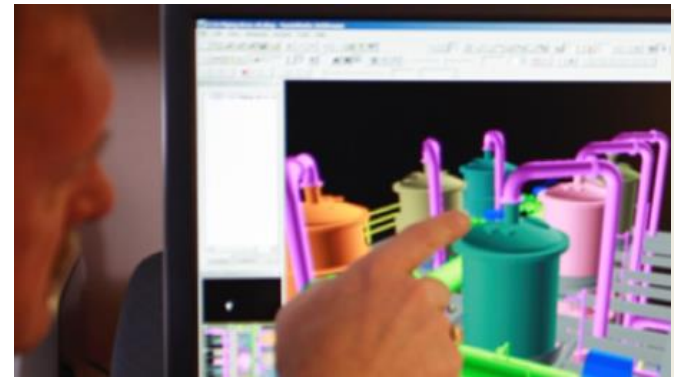
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- > ICM Background
- > Industry Vision
- > Purpose of Grind and Cook
- > Updates for ICM Technologies



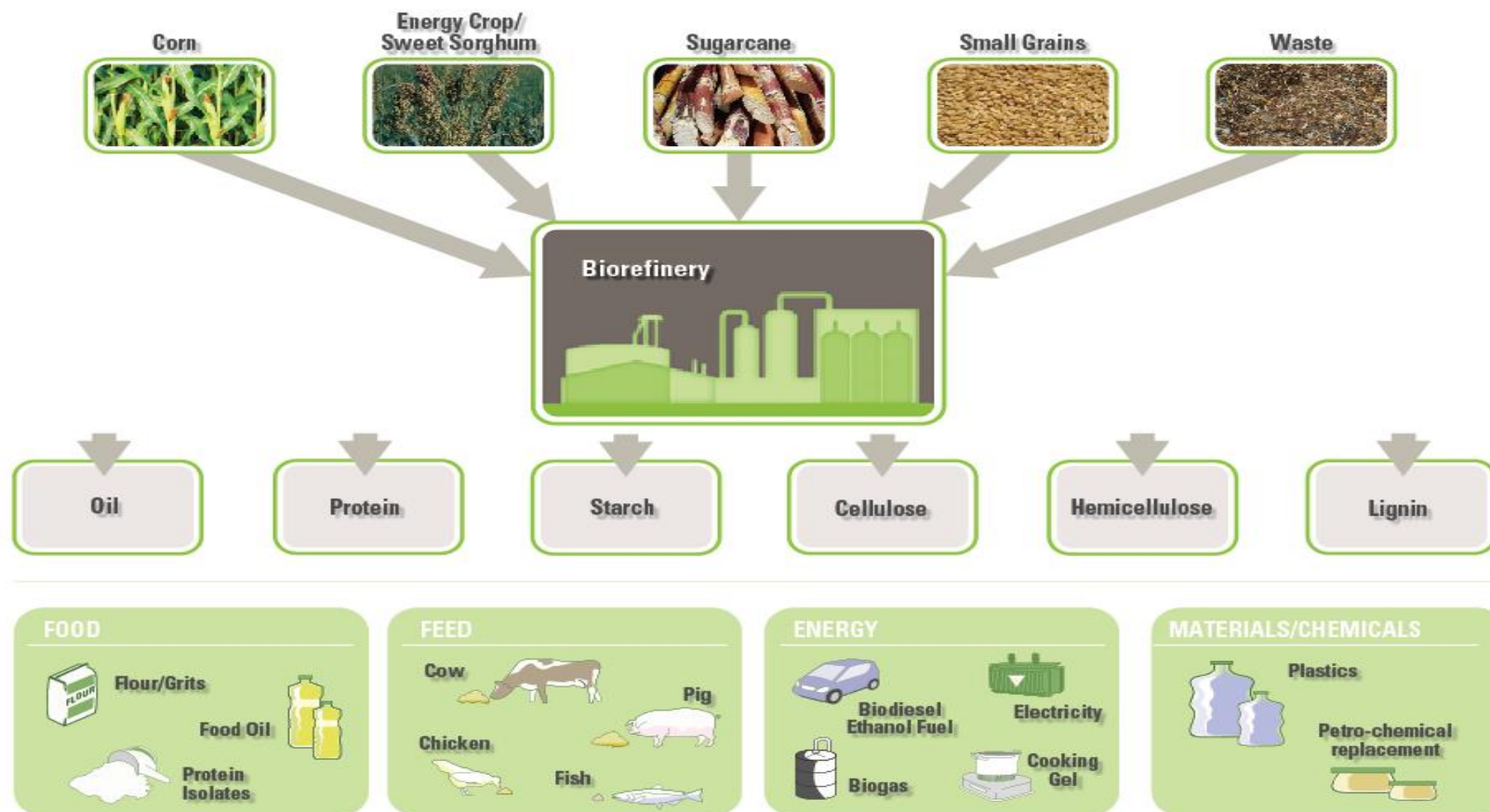
*...sustain agriculture while
advancing renewable energy.*

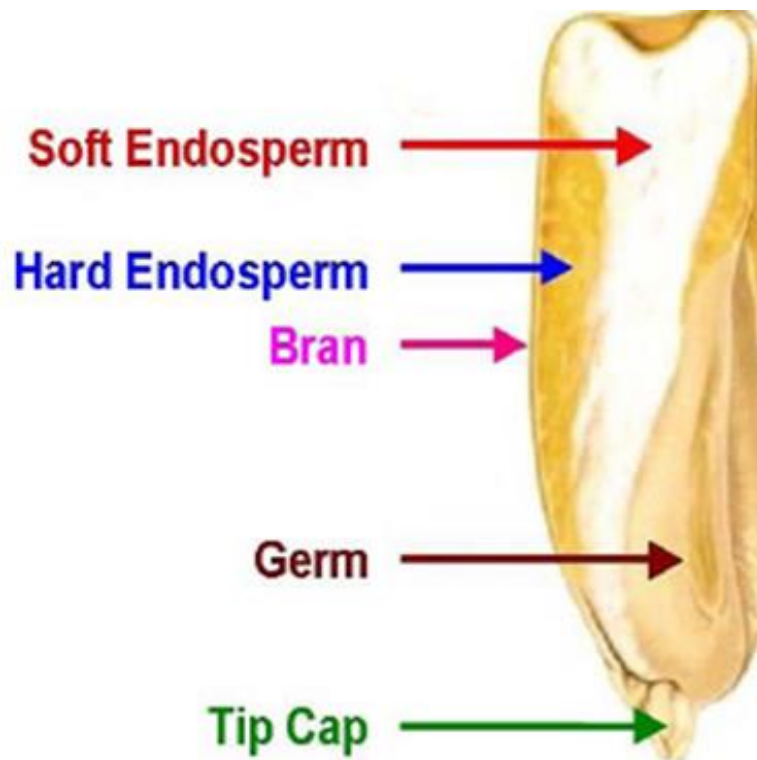
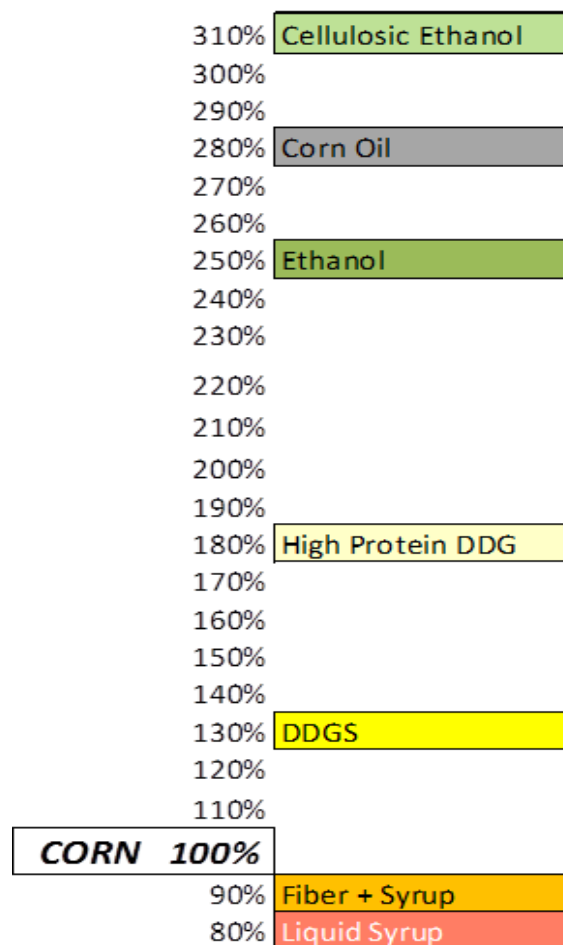
- > **Engineering and Construction, Optimizations, Plant Management, Dryers and Thermal Oxidizers, Bolt-On Technologies, Spare Parts, Manufacturing, Shutdown Services, Gasifiers, and R&D Services.**
- > **102 Ethanol Plants, 18 Retrofits, Hungary, Argentina, Canada**



Industry Vision: What is Possible?

4





> Purpose to physically, chemically, and biologically prepare grain for fermentation

- Breaking/grinding of grain
- Wetting of grain
- Gelatinization, swelling of starch (water + heat)
- Mechanical shear bursts swollen granules allowing enzyme action





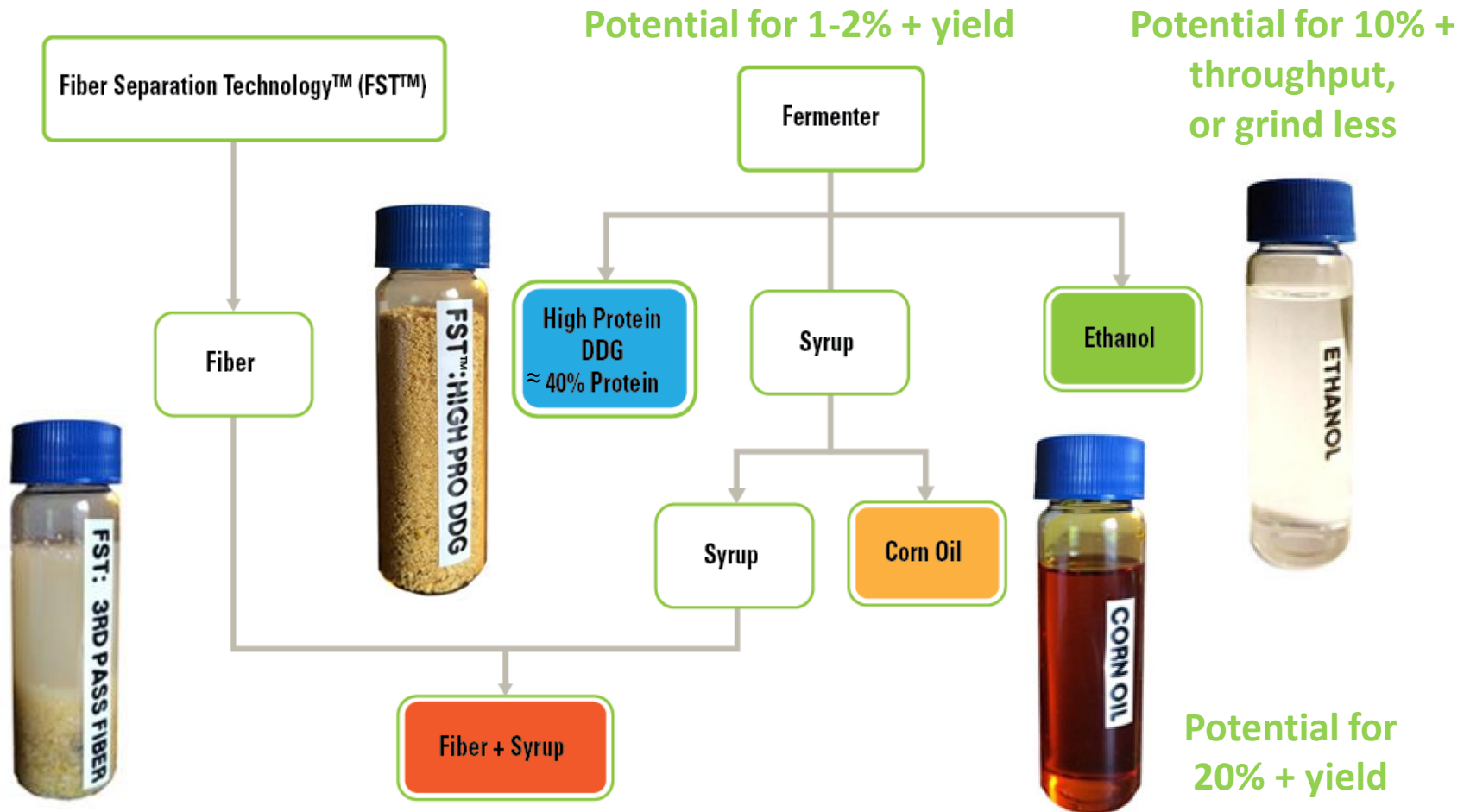
- > Patented
- > Selective Sizing
- > Potential for Ethanol +1-2%
- > Potential for Oil +10%
- > Operations cost saving opportunities
- > Protects Fiber for Fiber Separation Technology™ (FST™)



- > Purpose to physically, biologically, and chemically prepare grain for fermentation
- > FST™ adds ability to concentrate process flows



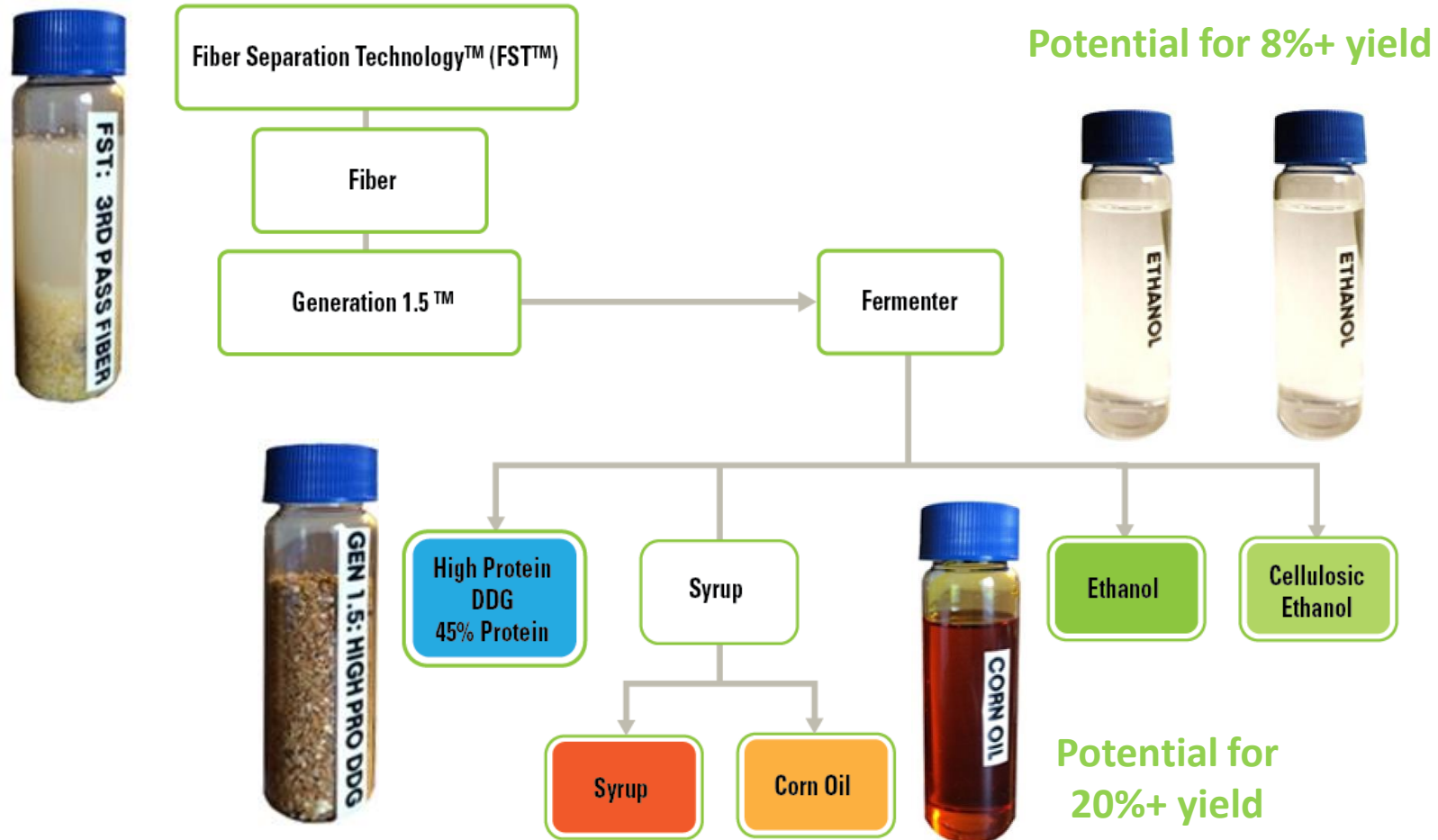


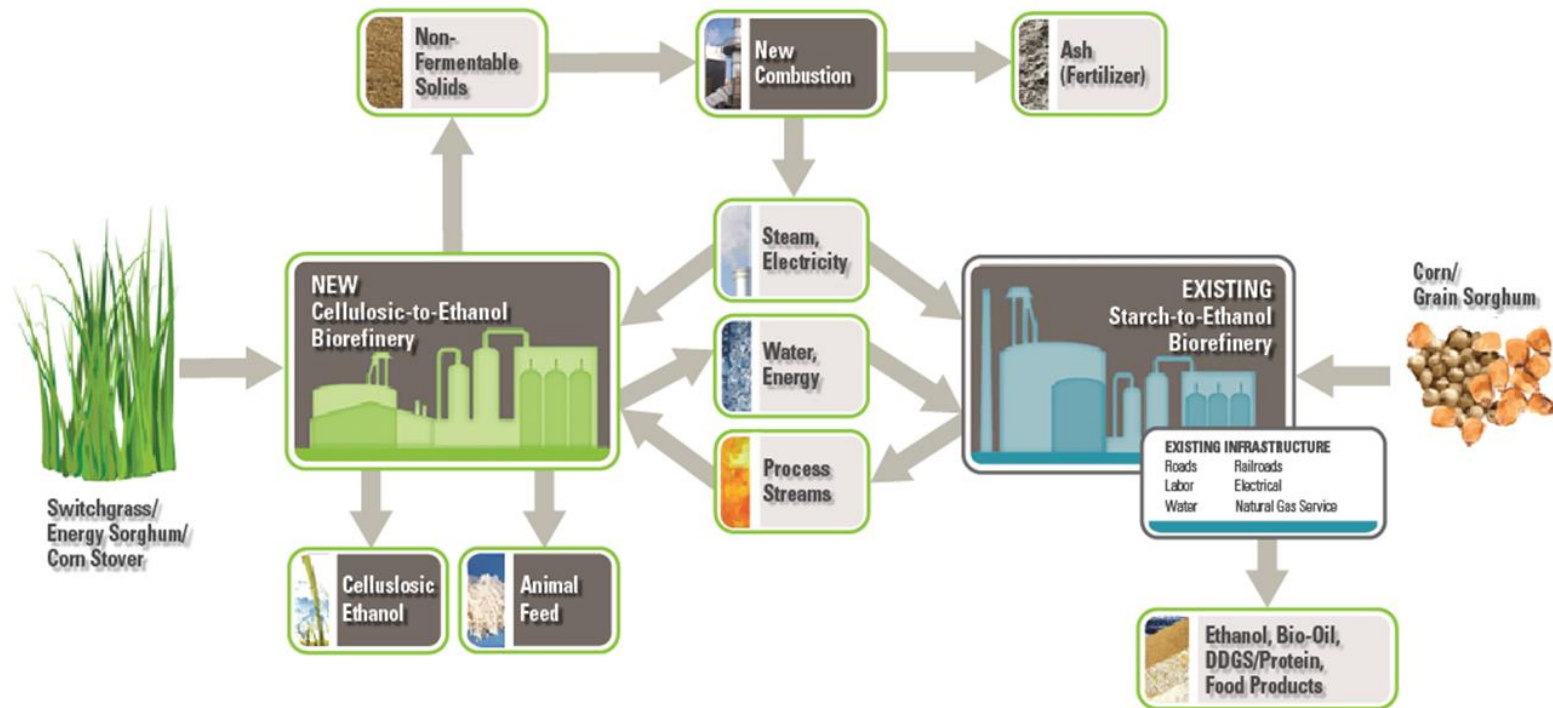


- > Purpose to physically, biologically, and chemically prepare grain for fermentation.
- > FST™ adds ability to concentrate process flows.
- > Generation 1.5 Grain Fiber to Cellulosic Ethanol Technology™ (Gen 1.5) adds ability to physically, biologically, and chemically prepare corn kernel fiber for fermentation.

- > **Fiber is Just-In-Time Feedstock**
- > **Truly Integrated**
- > **Reduced capital (\approx \$2.30/gal)**
- > **< \$0.30 op ex. No additional Water or Acids**
- > **3.08+ Gallons per bushel yield**
- > **Patent Pending**







- > **Grind and Cook prepare lignocellulose for fermentation**
 - > **Shared infrastructure (Roads, Rail, Utilities)**
 - > **Operational synergies (Energy, Water, Nutrients)**
 - > **Co-product optimization**

- > **18 ICM systems running today**
 - Over 1.05 BGPY production rate benefitting
- > **20 ICM systems running by late 2015**
 - + 9 strategic partner systems = 29 total
- > **Over 2.01 BGPY production rate total**



> Continuous operation at ICM BioFuels since August 2013

- Proven feedstock for Generation 1.5 Grain Fiber to Cellulosic Ethanol Technology™

> First/Early Adopters

- Aylmer, ON
- Redfield, SD
- Adams, NE
- Lyons, KS



- > Trial runs completed and processes proven
- > Full Scale (150MMGPY) Gen 1.5 engineering and economic work complete
 - 3.1+ gallons per bushel yield
 - \$2-\$3 USD/installed gallon
- > Trial schedules for 2015
 - Gen 2.0 switchgrass – Mar-Apr
 - Gen 2.0 energy sorghum – Jun-Jul
 - Gen 1.5 – Oct-Dec
 - “Live” tour opportunities available



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